

Jan

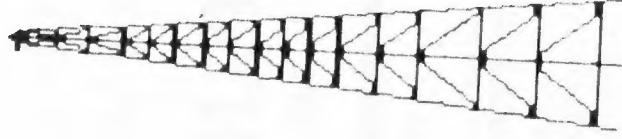
PARRA

1985

GRAPHS

**THE OFFICIAL NEWSLETTER
OF THE PALO ALTO AMATEUR
RADIO ASSOCIATION
AND**

THE MENLO PARK C.D. AMATEUR RADIO CLUB



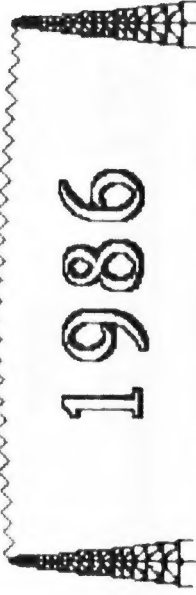
January

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The Official Journal of the Palo Alto Amateur Radio Association and the M.P.C.D. Amateur Radio Club

This month's meeting will be on Friday, January third, 1986 at the Rec. Center.

Our guest speaker will be **SP9LDJ/KB6HTJ**

Ed will be discussing *maritime* operations in emergency situations. He will also lecture on remote medical treatment via radio. 900 MHz will be demonstrated *during* the meeting!!!!!!

TECHNICAL NOTES ON PACKET RADIO Andy Korsak VE3FZK

There are many articles these days in ham radio magazines on the subject of the interesting new frontier: packet radio. They are mostly about useful applicability in emergency services or of a general expository nature. I thought some of our readers might want to know some of the technical details we've had to dig into while developing a computer program for receiving packets.

The basic difference between packet & RTTY is (1) the non-return-to-zero-inverted (NRZI) modulation (2) error checks & retransmissions as needed (3) standardized means for handling destinations & handovers (digipeaters) and (4) unrestricted 8-bit data. Here's how it's done:

NRZI means toggling between two audio tones (1200 & 2200 on 2M) at the data rate (1200 on 2M) but only when the next bit to send is a 0; no tone change if a 1 is sent. The two "1200" rates are unrelated (asynchronous); one is from a terminal or UART in a computer, the other is a tone from a modem. Obviously you can't send too many 1's in a row, or else the other end will lose sync! The rule is: after 5 1's a 0 must be stuffed in, even if the next bit is a 0. Of course, the receiving end must drop every 0 that comes after 5 1's.

Error checks, destination & routing are provided by using a "preamble", then the text or other data, then a

checksum & one or more "flags", as below:
FLAG(S) ADDRESSES CONTROL/INFO CHECKSUM FLAG(S)
01111110 112/168 bits 8,8,n*8 bits 16 bits 01111110
The addresses consist of 7 bytes each, allowing a specified chain of up to 8 digipeaters to forward your packet:
DESTINATION SOURCE REPEATER(S) e.g.
WA6GQO.VE3FZK.W6AMT..W6AMT.1W6IXU..W6AMT.2WB5EKU1
(I put dots for spaces to show the layout)

The 1 & 2 suffixes are used by hams setting up digipeaters with their calls. These "addresses" are sent using ASCII but the bits are shifted so the low bit is a 0, then come the ASCII data bits, bit 0 ... bit 6, with the "parity" bit (bit 7) chopped off, except when you come to the very last address, 7-th low bit, which is made a 1 so the receiver will know when the last digipeater (if any) is reached. As the packet passes through digipeaters, the "has-been-repeated" bit in the 7-th byte gets set before passing on, so the packet won't "reverberate" within the network of digipeaters.

I don't have room on this page to elaborate further -- if there is enough interest, we can continue in coming issues. I can tell you where I got the above info. Look at the AX.25 PROTOCOL SPECIFICATION from ARRL or Appendix B of the TAPR TNC manual, or call me on 145.23 for further details in the meantime. Several of us interested in this and other advanced topics have formed a "digital communications" net on 145.23 at 7 p.m. Wednesdays.



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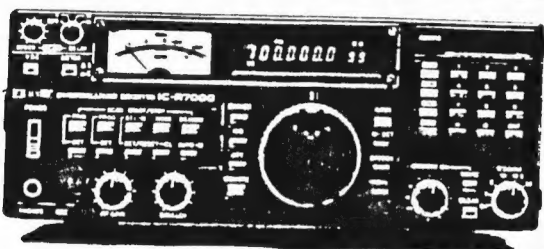
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IC-R7000



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It's the best 25 - 144MHz and 1.24 - 1.3GHz omniband coverage receiver on the market. The IC-R7000 with 99 preset programmable memories, the IC-R7000 covers aircraft, marine, business, ham (amateur radio), emergency services, government and television bands...all for a remarkably low price.

Keyboard Entry: For simplified operation, the IC-R7000 features direct keyboard entry. Precise frequencies can be selected by pushing the digit keys in sequence of the frequency. The frequency will be automatically entered without changing

the main tuning knob. Memory channels may be called up by pressing the memory switch, then keying in the memory channel number from 1 to 99.

99 Memories: The IC-R7000 has 99 memories available to store your favorite frequencies, including the scanning mode. All memories are backed up by a lithium battery.

Other Outstanding Features:

- FM/AM/SB Modes
- Scanning memory mode: select memory scan, priority or programmable frequency scan

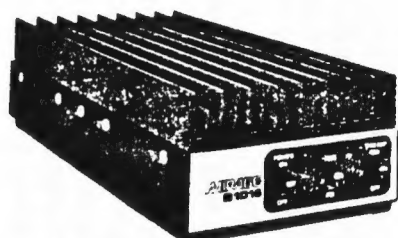
- Narrow/Wideband Selection
- Fine Tuning: 0.1, 1.0, 5.10, 12.5 or 250Hz
- Compact Size: 4 1/2" x 1 1/4" x 1 1/4"
- Dial Lock
- Noise Barrier
- S-meter, Carrier Meter
- Fluorescent Display with Dimmer Switch
- Optional IC-12 Infrared Remote Control
- Optional Voice Synthesizer

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COMMUNICATIONS EQUIPMENT

B1016 2 Meter Amplifier
10W IN — 160W OUT



DUAL PURPOSE — H.T.s or transceivers
FEATURES:

- Built-in receive preamp
- Adjustable relay delay for SSB
- Remote control operation with optional RC-1 Remote Head
- Automatic internal or external keying
- 1 to 2 Watts in will give 30 to 60 Watts out

SPECIFICATIONS

Frequency Range

RF Power In

RF Power Out

Modes

Receive Preamp

DC Power

144 to 148 MHz

200 mw to 15 Watts

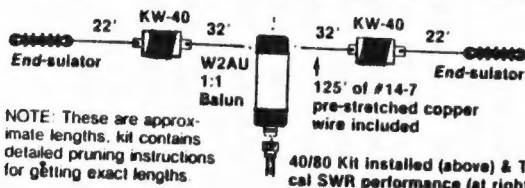
160 Watts nom (10 in - 160 out)

SSB, FM and CW

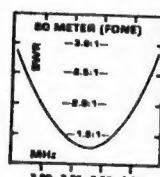
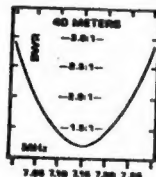
10 db gain min — 2.0 db ± 5 db noise figure

13.6 VDC 20-25 Amps

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40/80 KHz installed (above) & Typical SWR performance (at right).



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Want to brush up on your code?? W6QIE can be heard nightly starting 8 PM, every day except Monday, on 35900 MHz. They start at 5 WPM and progress over the hour to 35 WPM!! This is a great way to keep up your valuable Morse Code skills.

THE PACIFIC PACKET RADIO SOCIETY meets on the first Tuesday of every month. The next monthly meeting of the PPRS will be Tuesday, January 7th, 1986, at the Ampex Cafeteria in Redwood City. This meeting is attended by many PAARA members and is useful for anyone interested in digital communications.

Next month's speaker will be Bob Valio, W6RGG, from the latest Clipperton expedition. Rusty Epps, W6OAT, might also assist in the slide show presentation and interactive lecture in February. Be ready for a real "pile-up" when the Dxpedition team lands in Menlo Park!

**Its Time to
Sign Up**

**for you PAARA
membership !!!**

**Bring your check
to Jan. meeting.**

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